

THEORY OF MIND

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Abstract

This paper aimed to describe preschool age children's *Theory of Mind*, as a part of their cognitive development. Some factors that affect the children's *Theory of Mind* are parental talking, social economic background, parents' education, etc. The research participants are 82 preschool age children in South Jakarta, Indonesia. The method used in this paper was quasi experiment, adapted from Sobel, Li, and Corriveau's method. The statistical data were examined by one way ANOVA. These data suggest that the judgment of preschool age children's learning comprehension is based on one's behavior, not according to one's desire, attention, and intention to learn. This research can be an additional reference for early childhood education curriculum, especially in cognitive area and teaching strategy.

Keywords: learning comprehension, theory of mind, intention, desire, attention

1. INTRODUCTION

When heard the word "learning", the perception that appear in the mind of every person will different. The pre-school child usually defines learning as activity that related to behavior that showed by someone, without engaging that person's mind of activity, such as sit to listens the teacher [1]. Besides, the child in age-school has already start to define learning as an activity which can change their way in thinking, such as learning to comprehend something [2].

At the learning process of the child, there are mental states that related, like plan or intention, the desire, and the child's attention to learning. According to Siegler and Alibali [3], the intention is the mental states that can direct people to doing something. Desire is the mental state that is caused by the physiological aspect, such as the feeling of hungry, thirsty, sick, and emotion such as love, anger, fear. The attention is the child's focus to a thing. According to Sobel, Li, and Corriveau [4], those three mental states have important role in child's learning process, because if the child has a wish to learning, so they will pay attention to that information (knowledge), then they will apply their wish in learning become an action (the child have the learning intention).

What the pre-school child and age-school child know about learning, how (process) they get the knowledge, and what knowledge (content) that they get are very important to know because that child's knowledge will influence the figuration of their next knowledge. Besides, how the child know the happen of the learning is influencing their learning in commonly and in the end at goal of their academic achievement [4].

The figuration of a child's learning comprehension is related to the progress of Theory of Mind (the next it called as ToM) that child. Wellman [5] told the learning relevancy with ToM, that is learning is a transition process from ignorance become knowledge and from the misconception become the belief. Child can regeneration their knowledge by learning, from no-know become know and the first has already know become more know. For example the child who doesn't know (ignorance) about word "light" only can used to the inanimate object, such as fire and lamp, then used that word to this sentence "The fly is still light". The conception by the child about the word "light" maybe same as the word "life", but the usage of that word is still not right. The child can regeneration their knowledge about that word when the other person correct it, so they can use that word correctly in the other time (knowledge).

By the present of the ToM, child can recognize or comprehend the knowledge that become their mind or the other, and recognize the similarity and the difference. The research done by Pratt and Bryant [6] showed that child in age 3-4 years know that when showed a box, a person who ever saw the content of a box will know more about what available in box better than person who never see it. The research done by Wimmer, Hogrefe, and Perner [7] showed that when seen a box, the child in age 3 who is also know the box content consider that the other people who never see that box content also have the same knowledge with them. While child in age 5 has no trouble in comprehend this thing. That is because of ToM to child in age 5 has more progress better than ToM to child in age three.

Commonly, the pre-school child is still not comprehend yet where they get knowledge and not aware yet that they have already get new knowledge. When given two information chronologically, such as the long new information (not know yet by the child) or an information that has been known by the child before, the pre-school child said that they have already know those two information before [8]. Related to the ability of recognize the new knowledge, the child keep on build comprehension about the relation between a person's experience with their own experience after they reach the five age.

In connection with the importance to know how the child form learning comprehension, Sobel, Li, and Corriveau [4] did research concerning the child's conception about learning process by two researches. The Research 1 they measured the child's comprehension about learning by spontaneous pronouncement that produced by the child about learning. This spontaneous pronouncement data is secondary data that is picked from the research that previously done by Bartsch, Hovarth, and Estes [9]. From this spontaneous pronouncement can be known about what knowledge that really had before by the child and saved in their mind, not only knowledge that copied inside their mind without is known by the child. While the Research 2 Sobel and et al is done to know are the mental states have role in that learning process. The result that get from the Research 1 they are child start to tell pronouncement about what they learn in age 2,5-3 years. Collateral with the increase of the child ages, they start to speak about knowledge's source and their mind learning process, such as where they know something and how they know.

This research is adapting the method that ever done by Sobel, Li, dan Corriveau [4]. The participant in this research is 82 children in pre-school. This research aim is to view the role of Theory of Mind in child's learning process. The phenomenological that has done is experiment quasi, by picture and story that load mental states variation.

The phenomena that happen in Indonesia are the child and the parents define learning as activity doing homework [10]. The child doesn't know learning yet as knowledge transition process that engage thinking activities, from no-know become know and from already know become more know. Besides, it is still not know what the age is influencing the child learning comprehension progress. Because of that, the principal problem in this research can be well-defined "How the child pre-school comprehension based the Theory of Mind?" Researcher feel it is needed to do a research to examine the pre-school child learning comprehension based on Theory of Mind (ToM) to view what the child progress of Theory of Mind influence their learning comprehension.

The child pre-school group is child in age 3-6 years. This is based that age 4-6 years in Indonesia is include to pre-school age category (age kindergarten). The child learning comprehension is measured by child's response about the role of mental states (intention, desire, attention) in learning process. This is based on the thought that what the child know about learning and how they get the knowledge will influence the figuration of their knowledge in the future.

2. REFERENCES

The definition of learning comprehension that was used in this study is based on Sobel, Li, and Corriveau [4], about "learning involves the acquisition of knowledge". Thus, children's learning comprehension is about what children know about learning, including where they acquire knowledge, how they acquire knowledge, and what kind of knowledge they acquire.

According to Piaget's, children aged 3-6 years is categorized in preoperational period (2-7 years) in cognitive development stages. At this stage, the concept of language and concept of knowledge are rapidly growing. Children learn through their thinking process to form a new scheme on their mind. This phenomenon is marked form the child's thought which is still illogical. For example in the conservation experiment, in which children are shown seven glasses of water in equal amount. When they are asked to indicate which cup that filled most, children will choose the highest glass. According to Piaget, children thoughts based upon their perception than logical. During this period, the cognitive structures that develop in children make them able to represent something using symbols, language, and gestures. However, they are still not capable in solving problems that require logical thinking [11]

When the children are asked about the experience of learning, preschool children tend to understand learning based on individual behavior [12], for example, listening to the teacher, writing, reading, making homework (homework). This is in line with the results of research conducted by Thorpe et al. [1] who interviewed 31 children in the class preparation and 27 children in first grade in Australia. The results showed that preschool children's understanding about learning includes behavior that does not involve individual thinking activity, for

example, listening to the teacher, sitting properly, so they can learn better. In addition, Pramling [2] who interviewed children 3-8 years in Sweden said that during the preschool years, children are still in the form of understanding skills, activity, or behavior. There are a few kids who understand learning as a representational changes or changes in knowledge.

Premack and Woodruff who argued that the basic definition of ToM is a mental state attribution of a person against himself and others [in 13]; empathy [14] person's general ability to form thought and learning [5]; ability to understand mental states in them self and others, including understanding of the thoughts, beliefs, feelings, and desires of others may differ from ours; everything related to the mind and mental [15]; ability to predict and explain behavior of individual based on mental states which was understood [16].

By some definitions TOM above, it can be concluded that Tom is the ability of a person to understand his mental state and others. The ability of a person that can be used to shape thinking and learning as well as predicting the actions to be performed by others based on his understanding of the other person's mental state.

In this study, the discussion of the development of ToM in children is limited in three mental states [4]. Those mental states are: (1) the purpose / intention (intention), mental states are capable of directing a person in doing something. Children aged 6 months have been able to understand that a person's behavior has a purpose through the attention paid to something [3]. At 12 months of age, children understand that when other people notice /see an object will tend to reach the object he saw it [17]. Intention used in this study refers to the understanding of intention as the intention of being used by the children in the study, as an application of desire into actions [4].

The next Mental state is (2) desire, mental states are caused by physiological aspects, such as hunger, thirst, pain, and emotions, such as love, anger, and fear. Starting 12 months, children are able to understand these mental states. Children aged 18 months understand someone's desire shown by the reaction of the person. Other mental states are (3) attention; it is about the child's ability to see the attention / focus on adults to an object. Children in the age of 19-20 months understand that objects seen by adults when adults mention the name of the object [18].

3. RESEARCH METHODS

This research is a quasi-experimental research because the researchers did not perform randomization in group formation [19]. Participants in this study are students preschool (3-6 years). According to [20], the sample of the study had formed naturally belongs to the quasi-experimental study.

This study measures the response of preschool children (3-6 years) on the role of desire, attention, and intention in the learning process. Definition of Conceptual desire is a desire or person's willingness for something [3]. Conceptual definition is the focus of attention or the attention of someone on something [21]. While the conceptual definition of intention is a mental condition that can lead someone to do something [3].

The operational definition of desire in this study is "yes" (score of 1) and "no" (score 0), which is produced by child responses to questions about the desire of the characters in the story to learn the song. The operational definition of attention in this study is "yes" (score of 1) and "no" (score 0), which is produced by child attention to questions about the characters in the story of the song. While the intention operational definitions used in this study is "yes" (score of 1) and "no" (score 0), which is produced by child responses to questions about the intentions of characters in the story of the song that is shown through the child's participation in singing them.

The role of mental states such as desire, attention, and intention in the process of learning are measured by the response preschool children against 10 types of stories provided by the experimenter (data collectors). The story contains two variations of the three mental states that want to measure, for example, where the characters have a desire and attention in learning, whether the characters are said to be studying. By the child in the form of a "yes" and "no", it is known understanding of children's learning. Children learn when to recognize is said to understand mental states contained in the story.

The hypothesis of this study was preschoolers begin to understand the intentions of learning to learn based on someone. At preschool age children still do not understand studied by Theory of Mind. The independent variable (IV) in this study was aged children (3-6 years old). While the dependent variable (DV) is the understanding of learning through stories that contain variations of mental states (intention, desire, and attention).

Participants in this study were children aged 3-6 years who attend formal education (kindergarten). The final sample of this study consisted of 27 four years old (16 girls, M= 43 months), 28 five years old (14 girls, M=60.6 months), and 27 six years old (12 girls, M= 72 months). The participants were divided into three age groups. All the participants came from families with middle and upper economic backgrounds, have siblings, and stayed in the Jakarta area. The sampling technique used was accidental sampling [22].

This study used the tool as used by [4], through 10 images of children with different characteristics and a drawing of a teacher who was singing. The story contains mental states such as desire, attention, and intention, where the six types of stories are consistent, consistently either positive (eg + desire / attention +) and

consistently negative (eg desire -/attention -), and four types of stories that are not consistent, where mental states such as desire, attention, and intention of each story will have conflicts, such as desire (+) and attention (-). Children will be given two questions about the mental states that is controlled in the story to make sure that the child is given the mental states and answered correctly, and then will be given a test question "Are there children in the story learn to sing?"

From the results of validity and reliability, it is known that all items measure complies with the requirements of validity (> 0.300) and reliability. Rated R in the story is consistently positive $0.717 > 0.700$. Rated R in the story is consistently negative $0.967 > 0.700$. However, the value of R for the story is inconsistent $0.707 > 0.700$. Thus, the whole story stated Reliable.

Data collection techniques used in this study adapted from Sobel, Li, and Corriveau's method [4] is to provide 10 types of stories to the preschool children with the following procedures:

- Experimenter (the person who took the data) is a person who is familiar / known by the children: therefore researchers and other experimenter approached first child
- Experimenter then given instruction on images and stories for the children tested\
- Experimenter involved in the retrieval of research data is about 6 people (3 pairs), so that data collection can be done at once participants 3 people
- Each child is shown in figure 10 characteristics of children in the story and then read the story of each image one by one. Every completed story is read, the child directly answer the question.
- Each child is reminded of two mental states contained in each image (as a control question, considering the mental states those children in the story). Experimenter is still working.
- The distance between each story with a test question is 30-60 seconds, so the children still remember the story to answer the test questions

Data in the study were analyzed using percentage of children's respons.

4. RESULT

After obtaining the data in the form of a "yes" and "no" and why, the response of preschool children was compared (see table 1).

Story	3-4 years	5 years	6 years
Positive Consistencies:			
Desire+ /Attention +	81	79	89
Desire + /Intention +	78	96	93
Intention + /Attention +	85	86	96
Negative Consistencies:			
Desire - /Attention -	19	7	7
Desire - /Intention -	15	7	11
Intention - /Attention -	19	0	0
Inconsistencies			
Desire + /Attention -	19	4	15
Desire - /Attention +	37	39	52
Desire + /Intention -	11	14	19
Intention - /Attention +	30	21	44

Based on table 1.1 above, it is known that the number of preschool age (3-6 years) children who answered "Yes" to the question consistently positive test story is not much different. This indicates that preschoolers' children have the same understanding of the role of intention, desire, and in the process of learning one's attention. In the positive consistent stories, all preschoolers' children said that in the process of learning required intention, desire, and attention. In the negative consisten stories, all preschoolers' children judge that someone is learning even if she/he has not desire and intention, or has not desire and attention to learn. But if she/he has not attention and intention to learn, only four years old children judge that she/he is learning. In the inconsistent stories, the highest percentage of "Yes" were made by six years old children, who said that if someone has not desire, but she/he has attention to learn, she/he is learning (52 %). Meanwhile the lowest percentage of "Yes" were made by five years old children, who said that someone is learning if she/he has desire, although not pay attention to learning process.

Table 2. Justification Distribution (Percentage) on Question about Studying

Story Types	No Idea	Desire	Attention	Intention	Another Mental State	Another Behavior	Another Response
Desire +/Attention +							
3-6 years old	52	9	11	2	9	1	16
Desire +/ Intention +							
3-6 years old	53	14	2	9	1	2	19
Intention +/Attention +							
3-6 years old	58	9	7	2	4	4	16
Desire -/Attention -							
3-6 years old	49	10	2	0	1	26	11
Desire -/Intention -							
3-6 years old	58	14	4	0	9	6	10
Intention -/Attention -							
3-6 years old	51	11	1	2	2	27	5
Desire +/Attention -							
3-6 years old	52	11	4	0	1	29	2
Desire -/Attention +							
3-6 years old	56	9	17	2	2	7	6

From the table above, we can find that the biggest response of the children to the picture is “no idea” answer. This circumstance shows that the preschool age children who become the participants in this research are only able to answer the character which is there in the story whether they are studying or not. However, they are unable to explain the reason why they answer that way.

Totally, the research result shows that following the age increasing, children begin to be able to explain the reason of the answer to certain question. Children at 3-6 years old mostly answer that they do not have any idea or cannot explain about the reason behind the answer of the tested question. On the other hand, 3-6 years old children think that someone is called studying based on the behavior which is shown by that person. This can be found when they are given with question which includes the behavior aspect (the children in the story are drawing or playing the wood boxes); the children are able to explain the reason why those children are not studying.

This research had shown that preschool age children are not able to recognize the *mental states* in the studying process yet. They are just able to think that someone is called studying or not. However, it does not based on the *mental states* which can be found in the story but it is more to the behavior which is shown in the picture. For example, the children are not studying because they are drawing, playing the car toys, or playing the wood boxes. When the children are given with the stories and pictures which only includes the *mental states* only, whether in the positive or negative consistent story, as well as the inconsistent story, the children mostly does not explain the reason or answer “no idea”. In Indonesia, children and even the adults are not used to explain their opinion about something. This can be caused by the interaction quality between children and adults surround them, which is interaction which includes the *mental states* just like what the kids feel, what the kids want, and what the kids think. That interaction really influences the ToM development of the children [23]. If the understanding of the children is supported by the ToM development, the ability of the children for building the new knowledge frame will also improve optimally [4].

From that research result, we can see that the preschool children in Indonesia (the participants in this research) understand studying as a behavior which is shown by someone. This is suitable with the research result of Thorpe and friends [1] about the preschool children studying understanding which understands studying as a behavior without involving the thinking process.

5. CONCLUSION

The conclusion of this research is that preschool age children are still not comprehend learning according to *Theory of Mind* yet. This can be found from the children’s response measurement to the whole stories which include the *mental states* variation.

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